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Bernard, D. R., J. F. Parker and R. Lafferty. 1993. Stock assessment of burbot populations in small and moderate-size lakes. North American Journal of Fisheries Management 13:657-675.

### ***Abstract***

Stock assessment from 1986 through 1990 of 15 populations of burbot *Lota lota* in small to moderate-size Alaskan lakes is described. Adult ( $\geq$ mm total length) and juvenile (300-499 mm total length) burbot were captured in baited hoop traps set in systematic patterns across lakes when lakes were ice-free. Mark-recapture experiments were used to estimate abundance, and catch per unit effort was used to index abundance. All 15 populations had been exploited in winter recreational fisheries. Catch rates of burbot just after lakes became ice-free in the spring and just before their freezing over in the fall were about twice those during the intervening summer. Movements of marked burbot across depth zones were extensive and random; burbot were not concentrated, but were dispersed across lakes. No relationship between catches of juveniles and adult burbot in the same sets was found. Depth preferences of burbot followed their published thermal preferences except that juveniles were concentrated in deeper waters during the first month after lakes opened. Immediate and delayed mortality from decompression of burbot captured deeper than 15 m was indicated. Changes in abundance could be detected with mean catch per unit effort in all lakes. Mean catch per unit effort was mildly density-dependent; saturation of hoop traps with burbot was postulated as the reason. Suggestions on how to use behavior of burbot in planning stock assessment are given.

Keywords: Lake Louise, Susitna Lake, Summit Lake, Fielding Lake, Paxson Lake, Crosswind Lake, Harding Lake, George Lake, Alaska Lakes, burbot, *Lota lota*, stock assessment, mark-recapture, depth preferences, abundance estimates

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